

FINAL

**BIOLOGICAL ASSESSMENT
PROPOSED BORDER FENCE CONSTRUCTION**

OFFICE OF BORDER PATROL, TUCSON SECTOR

**(b) (7)(E) STATIONS
(b) (7)(E) COUNTIES, ARIZONA**



**U.S. Department of Homeland Security
U.S. Customs & Border Protection
Office of Border Patrol
Washington, D.C.**

AUGUST 2007

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August 2007

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**Final Biological Assessment
Proposed Border Fence Construction
Office of Border Patrol, Tucson Sector
(b) (7)(E) Stations
(b) (7)(E) Counties, Arizona**

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1.0 INTRODUCTION

United States (U.S.) Customs and Border Protection (CBP) and Office of Border Patrol (OBP) Tucson Sector propose to construct (b) (7)(E) miles of pedestrian fence along the U.S.-Mexico border within the (b) (7)(E) stations' Areas of Operation (AO) in (b) (7)(E) (b) (7)(E) Arizona (Figure 1). Pedestrian fence, temporary vehicle barriers (TVB) and permanent vehicle barriers (PVB) have been constructed or installed in or near most of these areas in the past five years. Installation of these fences and barriers were addressed in several National Environmental Policy Act (NEPA) documents including:

- October 2003, Final Environmental Assessment (EA) for Various Infrastructure within the (b) (7)(E) Station AO, (b) (7)(E) County, Arizona;
- November 2003, Final Supplemental Environmental Assessment (SEA) for Various Infrastructure within the (b) (7)(E) Corridor, U.S. Border Patrol, (b) (7)(E) County, Arizona;
- December 2004, Final EA for Temporary Vehicle Barriers, (b) (7)(E) Stations, (b) (7)(E) Counties, Arizona; and
- July 2007, Final EA for Pedestrian Fence near (b) (7)(E) County, Arizona.

Because of recent legislation (b) (7)(E) there is a need to convert the existing PVB and TVBs to a pedestrian fence and to extend the pedestrian fence in the gaps where no barrier exists. The purpose of the proposed fence is to help CBP agents and officers gain effective, operational control of our nation's borders. CBP is developing and deploying the most effective mix of proven technology, infrastructure, and increased personnel. In some locations, fence is a critical element of border security. In alignment with Federal mandates, including the provisions of the Secure Fence Act of 2006 (SFA), OBP has identified these

(b) (7)(E)



reaches of the border as locations where fence would contribute significantly to our priority homeland security mission.

The proposed fences would be located on private and Federal land managed by the U.S. Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS). Some of the BLM lands, particularly west of (b) (7)(E) and east of (b) (7)(E) include a narrow (60-foot) strip of land known as the Roosevelt Reservation. This corridor was set aside for border security and control of contraband by President Theodore Roosevelt in 1907.

The purpose of this Biological Assessment (BA) is to review the proposed fence construction scheduled for these (b) (7)(E) OBP stations in Fiscal Year 2007 and 2008 in sufficient detail to determine whether the fence would affect any of the Federally protected or candidate species potentially occurring within the project area, or their designated critical habitat. This BA is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S. Code 1536 [c]), and follows the standards established by the OBP.

This BA will address impacts to three Federally-protected species, each of which is listed as endangered:

- Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*),
- Jaguar (*Panthera onca*), and
- Kearney's blue star (*Amsonia kearneyana*).

Provisions under the Federal Land Policy Management Act require BLM to conserve biological diversity on their lands and to manage habitat for the protection of fish and wildlife. In order to guide management, BLM has classified certain species occurring on their lands as sensitive.

2.0 CRITICAL HABITAT

The Proposed Action addressed within this BA is not located within any area designated as critical habitat for any Federally protected species.

3.0 CONSULTATION TO DATE

OBP issued NEPA documents for various tactical infrastructure in these areas in 2003, 2004, and 2007, as described above. USFWS received copies of each of these documents. Coordination letters were submitted to USFWS during the preparation of each document, except for the (b) (7)(E) Fence EA; however, verbal correspondence with USFWS was conducted at various times during the preparation of that document.

A teleconference was conducted on August 9, 2007 with representatives from USFWS, OBP, and U.S. Army Corps of Engineers (USACE) Fort Worth District to discuss the potential for adverse effects to the jaguar. Major concerns included the need to address potential cumulative and indirect effects to jaguar of all the fence projects that are proposed within or near jaguar migratory corridors, especially in light of recent occurrence data that have been obtained.

A meeting was conducted at the OBP Tucson Sector Headquarters on August 14, 2007 to further discuss the jaguar issues. Present at this meeting, either in person or by teleconference, were representatives from USFWS, CBP, OBP, USACE, Gulf South Research Corporation (GSRC), and the Tohono O'odham Nation. USFWS presented information regarding recent jaguar movement and occurrence data, and stated that their opinion was that the proposed fence would have an adverse effect on jaguars. USFWS was concerned about the potential for the fences, once completed, to directly impede jaguar movement and indirectly to cause illegal traffic to increase in mountainous areas, which provide even higher quality habitat for jaguars. USFWS agreed to work closely with CBP/OBP to complete formal Section 7 consultation rapidly and identify conservation measures that could help to offset adverse impacts to the jaguar and improve the species' status. USFWS also suggested adding the lesser long-nosed bat to the consultation since the fence construction would affect their foraging habitat.

On the following day, August 15, 2007, a teleconference was conducted to discuss the potential conservation measures, which actions would be included, and the schedule for completion of the consultation. USFWS provided a draft letter via e-mail immediately after the teleconference which identified four alternative conservation programs that could be implemented. These programs or measures revolved around the size and number of gaps that would be left in the fence, OBP (b) (7)(E) and USFWS jaguar monitoring, and conservation and recovery programs.

On August 16, 2007, representatives from USFWS, CBP, OBP, BLM, USACE and GSRC met before a Tucson Sector Project Delivery Team meeting at the Tucson Sector Headquarters. Assistant Chief Patrol Agent (b) (6), (b) (7)(C) reviewed the four options and stated that OBP

(b) (7)(E)
(b) (7)(E)

4.0 CURRENT MANAGEMENT DIRECTION

There is an OBP operational requirement to respond to the high influx of IAs along the Arizona border and a Congressional mandate to construct border fence (*i.e.*, SFA). The urgency of this requirement, especially the SFA, necessitates construction of the fence at the earliest possible date. CBP and OBP are also proposing other infrastructure and technological projects in the region to enhance their capabilities to detect and deter illegal traffic throughout the (b) (7)(E)

(b) (7)(E)

stations' AOs.

(b) (7)(E)

(b) (7)(E)

systems are proposed for installation near the proposed project locations and would greatly facilitate OBP's enforcement operations and assist in decreasing or eliminating illegal traffic through and near these project areas. The technology systems are being coordinated through the CBP's Strategic Border Initiative program. (b) (7)(E)

(b) (7)(E)

(b) (7)(E)

(b) (7)(E)

5.0 PROJECT LOCATION AND DESCRIPTION

The project corridor is divided into three separate sections (see Figure 1). The western most section (b) (7)(E) within the (b) (7)(E) Station's AO.

Proposed fence in this section starts at (b) (7)(E) and extends (b) (7)(E) west and (b) (7)(E)

(b) (7)(E) east (Figure 2). The second section is located west of (b) (7)(E)

(b) (7)(E)

beginning approximately (b) (7)(E) west of (b) (7)(E)

(b) (7)(E) (Figure 3). The third section is located in the (b) (7)(E) stations' AOs

and encompasses a total of (b) (7)(E). These areas are primarily (b) (7)(E) west of (b) (7)(E)

(b) (7)(E) east of (b) (7)(E) and (b) (7)(E) west of (b) (7)(E) (figures 4 and 5).

(b) (7)(E)



(b) (7)(E)



(b) (7)(E)



(b) (7)(E)



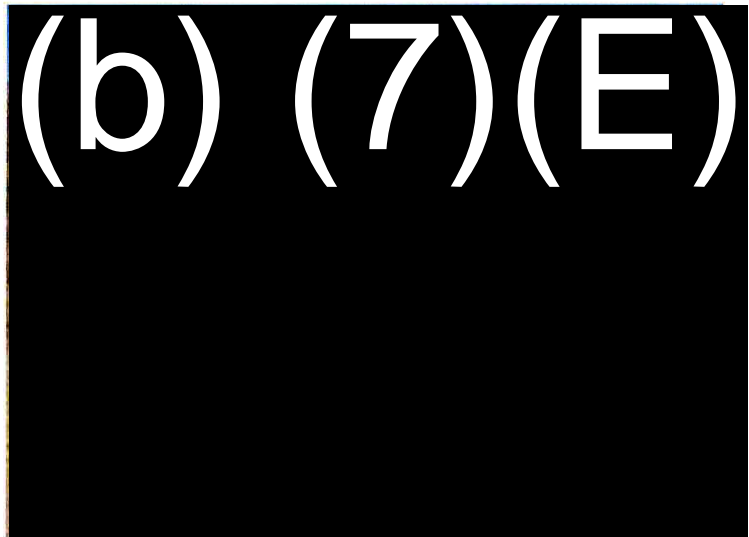
5.1 ENVIRONMENTAL CONDITIONS

5.1.1 (b) (7)(E)

The existing conditions of the (b) (7)(E) corridor were discussed in detail in the 2007 EA and are incorporated by reference (CBP 2007). The corridor area is comprised of Chihuahuan desertscrub with smaller desertscrub-grassland communities interspersed. The grassland communities are more prevalent (b) (7)(E) primarily within the Buenos Aires National Wildlife Refuge (BANWR). The desertscrub community consists of numerous small-leaved shrubs of uneven height (0.5 to 6.5 feet), with mesquite (*Prosopis glandulosa*) being the most predominant species. Canopy coverage ranges from 10 to 40 percent; density increases to nearly 70 percent in some arroyos. The herbaceous species typically provides ground coverage of 20 to 40 percent, but increases to nearly 75 percent in the desertscrub-grassland communities. Within the 60-foot wide Roosevelt Reservation (i.e., the project corridor) the vegetation communities have been disturbed by previous road construction, legal and illegal grazing, illegal vehicle and pedestrian traffic, fires, TVB installation, and OBP enforcement actions.

The washes and arroyos support denser vegetation communities comprised of mulefat (*Baccharis salicifolia*), catclaw acacia (*Acacia greggii*), catclaw mimosa (*Mimosa aculeaticarpa*), lotebush (*Ziziphus obtusifolia*), and desert honeysuckle (*Anisacanthus thurberi*).

The native bunch-grasses in the grassland community have suffered from cattle grazing and fire suppression that have permitted or benefited the proliferation of invasive grasses and shrubs and cacti. As shown in Photograph 1, the grasslands on the Mexican side of the border have been extensively overgrazed.



Photograph 1. Border at (b) (7)(E) looking east

The majority of the eastern portion of the project corridor lies within the BANWR. The BANWR is an 115,000-acre refuge established to preserve the endangered masked bobwhite quail (*Colinus virginianus ridgewayi*), but also supports consumptive and non-consumptive recreation (USFWS 2000). The refuge contains extensive grasslands, seasonal streams, and a lake. Over 300 species of birds, including hawks, herons, Vermilion flycatchers (*Pyrocephalus rubinus*) and golden eagles (*Aquila chrysaetos*) are found on this refuge. Other wildlife includes coyotes (*Canis latrans*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocarpa americana*). In addition to the masked bobwhite quail, BANWR protects habitat for five other endangered species.

5.1.2 (b) (7)(E)

The existing environmental conditions within the (b) (7)(E) corridor were described in the 2003 and 2004 EAs and are incorporated by reference (CBP 2003a and 2004). The (b) (7)(E) corridor consists primarily of semidesert grassland, encinal oak woodlands, and riparian corridors. The grassland community is the most widely distributed community in the project corridor. This community is made up of grassy landscapes broken up by widely scattered scrub trees. Various grasses, including gramma (*Bouteloua* spp.) and three awns (*Aristida* spp.), form a loose herbaceous layer with 6 or more inches between plants.

The encinal oak woodland community exists along slopes and is dominated by mature Emory oaks (*Quercus emoryi*) with an occasionally occurring gray oak (*Q. grisea*) and manzanita (*Arctostaphylos pungens*). Thin ribbons of mature netleaf hackberry (*Celtis reticulata*) are found along the upstream banks of washes at the bottom of these slopes. The mature netleaf hackberrys form a closed canopy while the younger netleaf hackberry form a loose mid-canopy. Heavy cattle grazing was evident in each of the communities during past surveys.

5.1.3 (b) (7)(E)

The existing environmental conditions within the (b) (7)(E) corridor were described in the 2003 SEA and those descriptions are incorporated by reference (CBP 2003b). The vast majority of the corridor consists of Chihuahuan desertscrub. However, the San Pedro River Riparian National Conservation Area bisects the project corridor approximately (b) (7)(E)

(b) (7)(E) west of the (b) (7)(E). The (b) (7)(E)

(b) (7)(E) (Photograph 2) is a low-gradient, alluvial desert river that flows uninterrupted by dams or major surface water diversions from its headwaters (b) (7)(E) miles south of the U.S.-Mexico border north into Arizona where it joins the (b) (7)(E)

(b) (7)(E) (Rojo *et al.* 1998). The area surrounding the (b) (7)(E)

(b) (7)(E) forms part of an ecotone, or intergrading of ecosystems, between

Sonoran and Chihuahuan deserts and Plains grassland. Conditions contributing to the exceptional diversity and importance of the area to migratory birds include the (b) (7)(E)

(b) (7)(E) position along an ecotone (where species from two ecosystems contribute to the overall diversity), the highly productive and structurally diverse riparian habitat, the presence of water in a desert ecosystem, and the relatively unaltered hydrologic regime (Naiman *et al.* 1993; Rojo *et al.* 1998; Commission for Environmental Cooperation 1999).

Chihuahuan desertscrub, typified by thorny species such as tarbush (*Flourensia cernua*), creosote (*Larrea tridentata*) and acacia (*Acacia* sp.), characterize the uplands bordering both sides of the river; while mesquite (*Prosopis* sp.) and sacaton (*Sporobolus aeriodes*) grass dominate the bottomlands adjacent to the riparian corridor.

5.2 CONSTRUCTION AND CONSERVATION MEASURES

The primary fence would be placed at (b) (7)(E) north of the U.S.-Mexico border, within the Roosevelt Reservation. The final design and construction of the fence will be developed by a design/build contractor. Although the exact fence design is not yet known; preliminary design performance measures dictate that the fence must:

- (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)
- be designed to survive the extreme climate changes of a desert environment;

- not impede the natural flow of water and have minimal impacts on small animal movement; and
- not impede maintenance access to border monuments required by the U.S. Section, International Boundary and Water Commission.

(b) (7)(E)

(b) (7)(E)

Furthermore, in washes or arroyos, fences would be designed and constructed, as appropriate, to ensure proper conveyance of floodwaters and to eliminate the potential to cause backwater flooding on either side of the border. Regardless of the final design, any fence that impedes illegal pedestrian traffic will also impede jaguar movement. (b) (7)(E) or similar style fences, spaced (b) (7)(E) in washes, could be installed to ensure proper conveyance of flood waters and, would not impede jaguar movement.

Construction of the fence would require clearing and grading (b) (7)(E) including (b) (7)(E) agaves, to construct an access road that fully encompasses the 60-foot wide Roosevelt Reservation. This road would be used for fence maintenance in the future. No additional improvements (e.g., all-weather surfacing) would be implemented as part of the Proposed Action in the (b) (7)(E) AOs; however, roads in the (b) (7)(E) area are expected to be improved to an all-weather surface with parallel drainage ditches and drag road. The all-weather road surface is part of the original proposed action of the (b) (7)(E) SEA (CBP 2003b).

All-weather roads would be surfaced with an aggregate and treated with a soil stabilizer such as PennzSuppress, Road Oyl, Rhino Snot, lignin sulfonate, or similar materials. Upon completion of the road improvements, only a top shot (i.e., small quantity applied to the surface) of the soil stabilizer would be required at a frequency anticipated not to exceed more than once per year for maintenance purposes to ensure the longevity of the roadways. The OBP would maintain the improved roads upon completion of the construction activities. This top shot would not require any ground disturbing activities and careful application of the stabilizer would ensure no material is spread outside of the road right-of-way. Surfacing is required to reduce maintenance costs and improve driving conditions during inclement weather. Surfacing would also reduce fugitive air particles created by OBP and private vehicles while traveling on unimproved roads. These types of road surfacing materials are approved by the U.S. Environmental Protection Agency and are non-toxic to fish and wildlife.

Any temporarily disturbed soils would be stabilized and re-vegetated with native species, including cottonwood and willow saplings at washes/arroyos, where appropriate, to provide erosion and sedimentation control. Disturbed areas would also be sprayed with a hydroseed mixture to establish a herbaceous cover more rapidly.

Construction would occur between September and March to avoid disturbance during bird nesting and migration seasons. However, given that the proposed action is partially in response to a Congressional mandate, compliance with this schedule might not be achievable. In the event construction must occur during the bird breeding/migration season, biological monitors would be provided to document and avoid all migratory bird nests. Equipment required for the construction activities would not be staged or maintained in or near any surface water resources to prevent any contamination from petroleum, oil, and lubricant spills that could occur.

Work would be conducted in the daylight hours to the extent practicable. Nighttime construction activities would be conducted only when absolutely necessary for adequate concrete pours (depending on fence design) or in the case of an accelerated construction schedule to meet Congressional mandates. No nighttime construction will be conducted in vegetated washes. Portable lights with generators would be used during nighttime construction. However, lights would be equipped with shields to focus the illumination on the work area and reduce light trespass into other areas.

Other conservation measures that would be implemented are presented in the Conclusion and Determination Section.

6.0 SPECIES ACCOUNTS

6.1 ENDANGERED SPECIES

6.1.1 Jaguar

The jaguar is the largest and most robust of the North American cats. They are solitary and somewhat territorial, except when breeding, which can occur throughout the year. Dens can be found in rocky caves, dense thickets, and other sheltered areas (USFWS 1980). Although jaguars have been found in a wide variety of vegetation communities and are noted for their adaptability to a variety of environmental conditions, habitat studies in the core part of their range indicate a close association with water, dense cover, sufficient prey, and lack of

disturbance (Hatten *et al.* 2003). Individuals in Arizona have been found in Sonoran desertscrub through subalpine conifer forests (AGFD 1998).

Jaguar home ranges are highly variable, depending on the topography, prey abundance, and the population density of the cats (Brown and Lopez Gonzalez 2001). There are no known breeding populations in the U.S. Jaguars may cross into Texas, New Mexico, and Arizona from adjacent Mexico (AGFD 1998).

Jaguars range from South America to the southwestern corner of the U.S. The jaguar is an opportunistic hunter feeding on large and small mammals, reptiles and ground nesting birds (NatureServe 2004). However, jaguars have been documented as feeding on 85 different prey species some of which include sea turtles, peccaries, and cattle (Van Pelt 2005).

The jaguar was designated as an endangered species by the USFWS on August 21, 1997 (62 Federal Register [FR] 39147). The jaguar is listed as a "Wildlife of Special Concern" by the State of Arizona. The jaguar is also protected from international trade by the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Information on jaguar ecology and behavior, especially at the northern edge of the species' range, is very limited. Jaguar distribution patterns over the last 50 years suggest that southeast Arizona is the most likely area for future jaguar occurrence in the U.S (Hatten *et al.* 2003).

6.1.2 Lesser long-nosed bat

Lesser long-nosed bats do not hibernate (AGFD 2003a). They migrate in September or October to Mexico, where they breed and spend the winter and return to Arizona as early as April to bear young. After the young are weaned, the maternity colonies begin to disband in July and August, but some bats remain at roosts into October. These bats are capable of foraging flights up to 40 miles from the roost sites. The lesser long-nosed bat's range starts at lower elevations (3,500 feet) from April to July and expands to include areas up to about 5,500 feet from July to September.

The lesser long-nosed bat's diet consists of nectar and pollen from flowers of columnar cacti (*e.g.*, saguaro cactus [*Carnegiea gigantea*] and organ pipe cactus [*Stenocereus thurberi*]) in

early summer and agave later in the summer and early fall (AGFD 2003a). They may also feed on ripe cactus fruits at the end of the flowering season.

The lesser long-nosed bat was listed as an endangered species in 1988 with no designated critical habitat (53 FR 38456). A recovery plan was published by the USFWS in 1995 (USFWS 1995). The lesser long-nosed bat was also listed by the AGFD as "Wildlife of Special Concern" in 1996, by the USFWS Region 3 as "Sensitive" in 1988, and as threatened in 1994 by Mexico's Secretaría de Desarrollo Social (AGFD 2003a).

The main threats to this species are the reduction in numbers of maternity colonies and decline in size of remaining colonies due to exclusion and disturbance (AGFD 2003a). In addition, large reductions in acreage of native agaves over large areas of northern Mexico due to excessive harvesting for local manufacture of mescal and tequila are also reasons for decline of this species.

The lesser long-nosed bat recovery plan provides protective actions needed for the recovery of the bat (USFWS 1995). Protection of all known roost sites and food plants within a radius of 50 miles around known roosts will help prevent this species from going extinct. In addition, the protection of food resources along migratory pathways may be important to the survival of the species. Specifically, the following actions are needed for recovery:

- (1) Continue protecting roost sites and evaluate the need for and implement protection of food plants;
- (2) Monitor all major roosts in Arizona, New Mexico, and Mexico once a year;
- (3) Continue surveying for additional roosts in the U.S. and Mexico;
- (4) Develop and conduct a public education and information campaign in Arizona, New Mexico, and Mexico on the beneficial aspects of bats in general and the lesser long-nosed bat specifically; and
- (5) Conduct critical research on population census techniques, physical requirements for roosts, foraging ranges of roosts, reproduction and mating systems and other life history and habitat questions.

The lesser long-nosed bat will be considered for downlisting, in part, when each major roost population has been monitored yearly for at least 5 years, and monitoring results indicate that populations in all roosts have remained stable (± 10 percent) or have increased in size for at least 5 years following approval of the recovery plan.

6.1.3 Kearney's Blue Star

Kearney's blue star (*Amsonia kearneyana*) is a perennial herb in the dogbane family. The Kearney blue star was listed as an endangered species in 1989, with no designated critical habitat by the USFWS (54 FR 2131). It was also listed in 1993 as "Highly Safeguarded" by the Arizona Department of Agriculture, and in 1990 as "Sensitive" in Region 3 by the USFWS (AGFD 2003b). Threats to Kearney's blue star include low population numbers, insect predation on seeds, catastrophic flooding, and soil erosion accelerated by losses in vegetation cover and vigor due to livestock grazing.

A recovery plan for the Kearney blue star was published in 1993 (USFWS 1993). The objective of the recovery plan is to establish or maintain 10 self-sustaining natural populations containing 200 reproducing individuals of Kearney's blue star and establish procedures to insure continued protection of these populations from human and natural threats.

7.0 EXISTING ENVIRONMENT

7.1 JAGUAR

In Arizona, the species' range historically included the mountainous parts of eastern Arizona and north to the Grand Canyon (Hatten *et al.* 2003). Within the last 100 years, there have been very few jaguar sightings. Although females and cubs have been documented in Arizona, recent (1996) sightings have been of males. One male in particular seems to have become a resident; however, the jaguar's population is not large enough to consider this a resident population. Individuals are believed to be transients, traveling up to 15 miles a day, and may cross from Mexico into Texas, New Mexico, and Arizona. Investigations into the source population of jaguars in Mexico have led researchers to northern Sonora where an extant population has been found. This population of jaguars in the region of the Yaqui and Aros Rivers is located approximately 140 miles south of Douglas, Arizona (Haynes *et al.* 2005). Figure 6 illustrates the jaguar's range in northern Mexico and travel corridors into the U.S.

The Jaguar Conservation Team (JAGCT) was founded in 1997 and is comprised of Arizona and New Mexico State Wildlife Agency personnel, USFWS biologist, other agency representatives, private individuals, and other stakeholders. Arizona Game and Fish Departments has mapped potential jaguar habitat in each state that delineates the highest potential for jaguars (Figure 7).

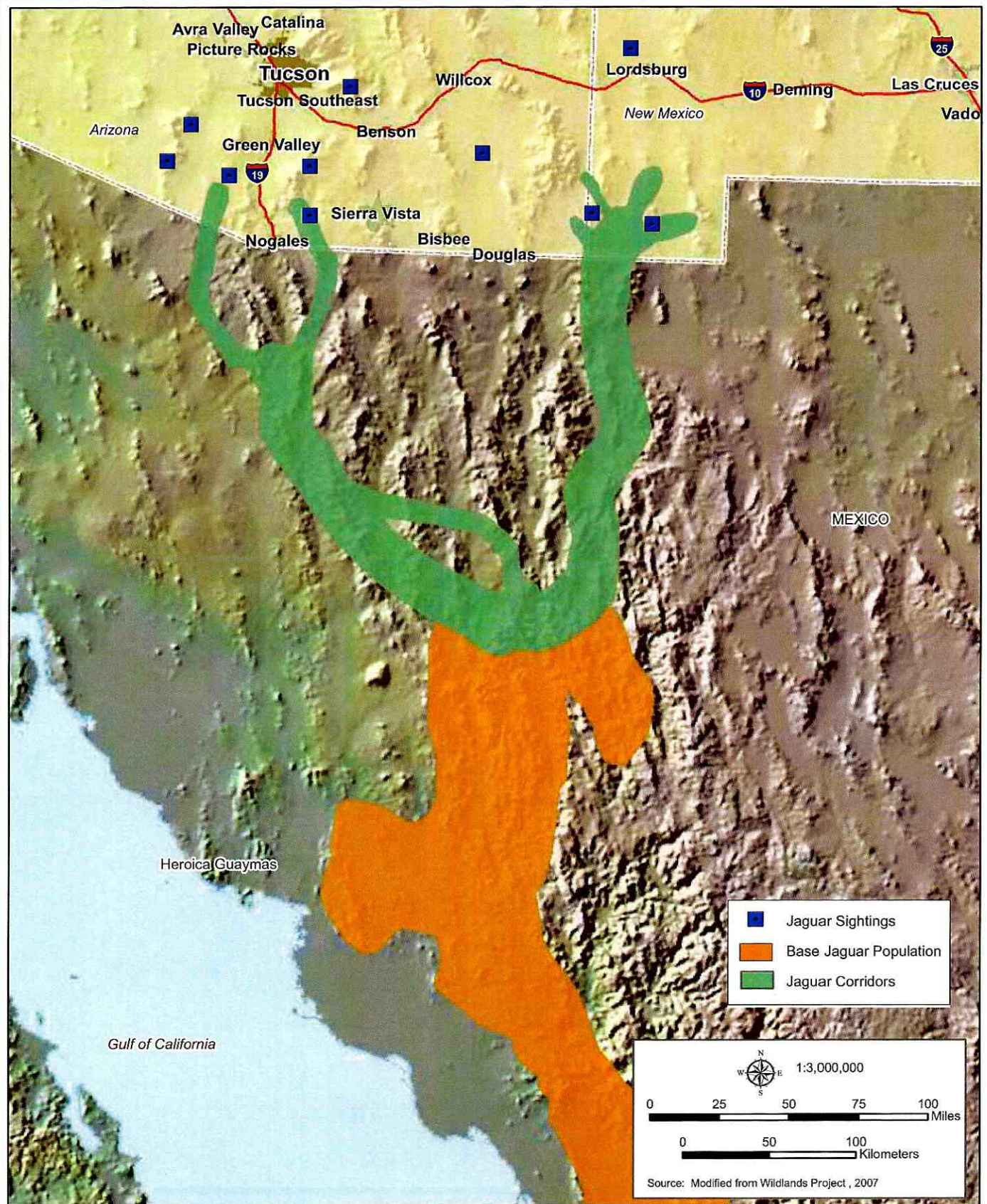


Figure 6: Jaguar Routes and Sightings



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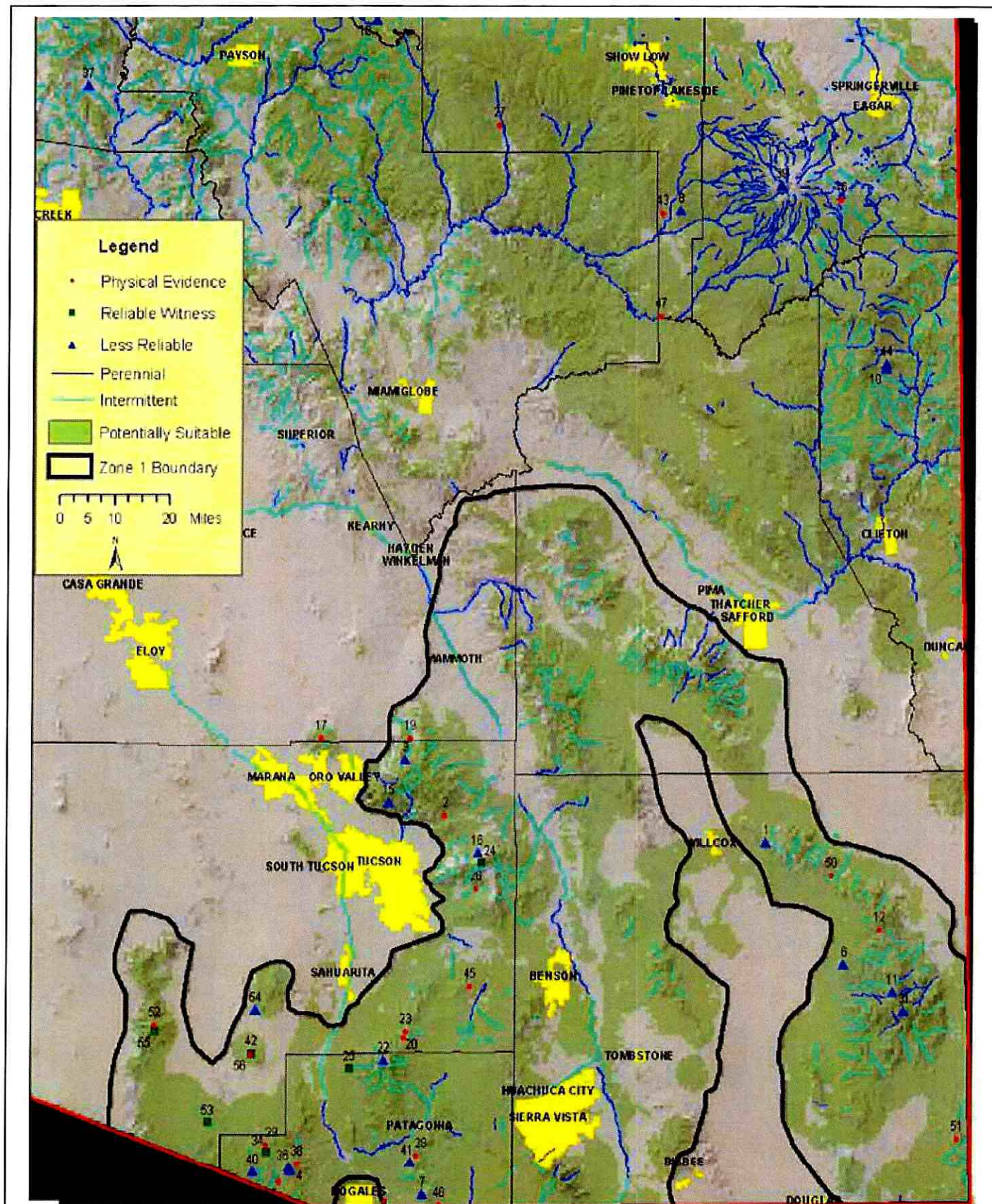


Figure 7: Suitable Conservation Area for Jaguars in Southeast Arizona (from Hatten et al. 2003)

In the last 10 years, the JAGCT has photo-documented four jaguars along the U.S.-Mexico border from the New Mexico state line to Arizona's Baboquivari Mountains, west of the Sasabe fence corridor. Two Arizona jaguars were photographed in 2001, 2003, and 2004 (Van Pelt 2005). One account in southwest Arizona was captured on film by Jack Childs in December of 2001 using a motion-activated camera (Associated Press 2002). Two recent jaguars photographed by JAGCT were males and one of the cats has been within southern Arizona since at least 2001. Of the four jaguars documented in southern Arizona, the cats were present in the state during all months of the year (Van Pelt 2005). Previously, two photographs of jaguars were taken in 1996, one by Jack Childs in the Baboquivari Mountains west of Sasabe while hunting mountain lions (*Felis concolor*) on August 31, 1996 and one in the Peloncillo Mountains, along the New Mexico border near San Simon (Brown and Lopez Gonzalez 2001, Defenders of Wildlife 2005). The jaguar photographed in the Peloncillo Mountains was photographed again in 2006 by Warner Glenn and Kelly Glenn Kimbro (Borderlands Jaguar Detection Project 2007). Another jaguar, known as Macho B, has been photographed every month of the year from 2004 until 2007 (Borderlands Jaguar Detection Project 2007).

The JAGCT has mapped confirmed jaguar sightings using Geographic Information System techniques to compare historical occurrences with landscape features. The majority of sightings occurred in scrub grasslands 4000 to 6000 feet above mean sea level. Jaguars seemed to prefer rugged terrain within 6.21 miles of a water source. The amount of potentially suitable habitat in Arizona ranged from 21 to 30 percent of the state. The JAGCT is narrowing its focus on Santa Cruz, Pima, Cochise, and Graham counties, Arizona where most of the sightings have taken place (Van Pelt 2005).

In March 2001, Anna Childs and Jack Childs founded the Borderlands Detection Project. Their goals are to describe and quantify the current status and distribution of jaguars along the borderlands and to apply the finding to sound conservation practices. They use remote sensing trail cameras focused on major travel routes and natural wildlife funnels through connective habitats in the mountains of southern Arizona. Some scientists believe that southern Arizona jaguars are transient individuals that are displaced by more dominant males from a known breeding population located approximately 140 or 180 miles south in Sonora, Mexico. In this scenario, dispersed jaguars move to Arizona where they grow to maturity. Once maturity has been reached the jaguars return to the Sonoran population as breeding adults (Childs *et. al.* n.d.).

The JAGCT's data may suggest otherwise. They have taken photographs of jaguars at 2 to 5 years old and have photographed the same jaguars at 6 to 8 years of age; well into breeding age. The team has not yet confirmed any female jaguars in the borderland but historical records from New Mexico and Arizona from 1900 to 1995 confirm the presence of females during that period. One record stated that two females had three cubs between them, thus suggesting that there was a breeding population in the southwestern U.S. at one time (Childs *et al.* n.d).

NatureServe Explorer (2004) reported estimates of six to 20 extant jaguar occurrences in Sonora in fair condition, but were historically more abundant. Their population status in Mexico is not well known but, is believed to be declining in northern Mexico (NatureServe Explorer 2004).

It is believed that human activities impact important landscape components utilized by dispersing jaguars. The sky island habitat is rapidly being modified and fragmented by urbanization and recreational activities (Van Pelt 2005). Deliberate persecution, excessive and illegal hunting, over-exploitation by the fur industry, and predator control activities have extirpated this species from much of its original range and seriously reduced their numbers in most of the rest of the U.S. (USFWS 1980). Timber and brush clearing have degraded and destroyed habitat to the point where reestablishment of populations in the northern part of the range is doubtful (USFWS 1980). Scrub grasslands of southeastern Arizona have become increasingly dominated by desertscrub vegetation due to extensive fire suppression, drought, and cattle grazing (Hatten *et al.* 2003). Human activities have also caused many watercourses to dry up or become intermittent. Increasing number of human settlements along the international border could restrict jaguar movements between Mexico and Arizona.

7.2 LESSER LONG-NOSED BAT

The lesser long-nosed bat's habitat is described as desert grassland and shrubland up to oak transition (AGFD 2003a). According to the AGFD, this species' preferred plant communities are described as palo verde/saguaro, semi-desert grassland, and oak woodland. All of the Tucson Sector's stations have vegetation communities that are considered lesser long-nosed bat foraging habitat and many known roost sites are located within several of the stations' AOs.

These bats roost in caves, mine tunnels, and occasionally in old buildings and were reported in a culvert in (b) (7)(E) of the (b) (7)(E)

Confirmed observations of lesser long-nosed bats have occurred in the (b) (7)(E) and (b) (7)(E) stations' AOs. In the (b) (7)(E) Station's AO, lesser long-nosed bats have been documented roosting in the (b) (7)(E) mountains along the western boundary of the Station's AO. Several known roost sites, including the (b) (7)(E) are located within the (b) (7)(E) Station's AO in or near the (b) (7)(E) mountains. The (b) (7)(E) is one known lesser long-nosed bat roost site located within the (b) (7)(E) Station's AO. Roost sites in the (b) (7)(E) Station's AO are also documented in the (b) (7)(E) and along the (b) (7)(E). Lesser long-nosed bats have been documented roosting in the (b) (7)(E) and south of the (b) (7)(E) in the (b) (7)(E) Station's AO. No known maternity roosts are located within the project corridor.

Survey efforts indicate that thousands of lesser long-nosed bats roost and feed in Arizona seasonally (USFWS 1995). If the census numbers are correct, the lesser long-nosed bat has had a substantial increase in numbers since the 1984 to 1985 surveys. Its population size appears to be far larger (by two orders of magnitude in Arizona) than was known in 1985, and its numbers in some locations appear to be relatively stable from year-to-year (USFWS 1995). USFWS is actively reviewing several listed species, including the lesser long-nosed bat (70 FR 5460).

7.3 KEARNEY'S BLUE STAR

Kearney's blue star is known to occur naturally only on the western slopes of the (b) (7)(E) (b) (7)(E) and (b) (7)(E) County. The Kearney blue star has been introduced into (b) (7)(E) which is on the east side of the (b) (7)(E) (AGFD 2003b). In 1982, McLaughlin found a total of eight individuals in the entire population in (b) (7)(E) and a follow-up survey in 1987 revealed no new individuals (AGFD 2003b). In 1987, the USFWS contracted with Southwestern Field Biologists to transplant Arizona Sonoran Desert Museum seeds from (b) (7)(E) to establish a new population. The introduced population in (b) (7)(E) (b) (7)(E) declined from approximately 130 to 35 following a flood in 1990. The one native population consists of approximately 10 to 15 individuals (AGFD 2003b). The native population exists on the TON, and the introduced sites exist on the BANWR. Because of the vulnerable

canyon bottom habitat, Kearney's blue star is greatly affected by flooding. It is also threatened by disturbance and damage from livestock.

8.0 EFFECTS

8.1 DIRECT EFFECTS OF PROPOSED ACTION ON FEDERALLY LISTED SPECIES

Construction and maintenance activities associated with the fence may result in disturbance to jaguars and degradation of their habitat. The Proposed Action would permanently remove (b) (7)(E) acres of desert scrub and desert grassland communities. In addition, some riparian vegetation would be removed at the major washes. Riparian vegetation provides value as movement corridors for the jaguar. Human activity and elevated noise levels would disturb any jaguar in the immediate area during the construction period, and possibly hinder or impede movement into the U.S. ✱

The Proposed Action would permanently alter vegetation communities in the late-summer range of the lesser long-nosed bat. ✱ Agaves, the primary forage species during late summer, are common along approximately (b) (7)(E) acres of the project corridor. Removal of (b) (7)(E) acres of agaves may affect, and is likely to adversely affect, the lesser long-nosed bat. Saguaro, barrel cactus, and yucca, which are early summer forage species, are not common in the project corridor. These forage species are not in flower during the late summer when the lesser long-nosed bat migrates into area nears the project corridor.

No direct impacts to Kearney's blue star population would occur since construction is not proposed in areas where this species exists.

8.2 INDIRECT EFFECTS OF PROPOSED ACTION ON FEDERALLY LISTED SPECIES

Vehicle traffic, foot traffic, litter, and presence of IAs can affect habitat by altering composition, structure and function of wildlife habitats. Vehicle and foot traffic can lead to the destruction of vegetation and degradation of riparian, wetland, and other sensitive habitats. This habitat alteration can lead to alteration of erosion patterns and changes in habitat conditions such as light, temperature, and humidity. Litter and the presence of IAs can alter the behavior (*i.e.*, foraging, predatory, and plant dispersal behaviors) of sensitive wildlife, especially jaguars.

Accidental wildfires caused by IAs have had devastating affects in native habitats not adapted to a regular fire regime and can encourage the invasion of salt cedar (*Tamarisk* spp.) and other invasive species that reduce the habitat quality.

Installation of the fence may cause an increase in illegal traffic and subsequent law enforcement activities to the east and west of the fences, and potentially on the (b) (7)(E)

(b) (7)(E) Some of these areas are important jaguar habitats where the species has been documented recently. Although, this shift in illegal traffic is totally at the discretion of the IAs, it is possible that the IAs would attempt to cross the border in other more remote areas, such as adjacent mountain ranges and major streams like the (b) (7)(E) Increased illegal and law enforcement activities in these areas may impede jaguar movement across the border and result in general disturbance to jaguars and degradation of their habitat. This increase would adversely affect jaguars that utilize these higher quality travel corridors as jaguars are sensitive to human presence. Additional OBP enforcement actions could exacerbate these adverse impacts.

A primary fence that is designed to prevent illegal pedestrian traffic from entering the U.S. will inherently restrict jaguar movement across the U.S.-Mexico border. Jaguars could circumvent* the ends of the fence; however, this additional travel time would require jaguar to expend additional energy and increase the potential for encounters with humans, vehicles, and other stresses. Maintaining connectivity between Arizona and Sonora is critical to the continued range extension of jaguars into Arizona. Should all jaguar movement corridors be* compromised, it is highly likely that the jaguar will become extirpated from Arizona as it believed the Arizona population currently relies on interchange with jaguars in Sonora for its continued survival.

In the long-term, however, the jaguar could incur indirect beneficial effects from the Proposed Action by the reduction of illegal traffic and OBP enforcement actions. By reducing illegal traffic the law enforcement footprint on the landscape would be reduced, thereby reducing the amount of human presence and habitat degradation. The disturbance would be limited to the project corridor and the jaguar could use the (b) (7)(E) mountain ranges and the (b) (7)(E) riparian areas as travel corridors.

Ground vibrations could disturb known roosts in the (b) (7)(E) Known maternity roosts are west of the range of potential impacts and would not be affected. The nearest known roosts at which substantial numbers of lesser long-nosed bat have been observed is located near (b) (7)(E) Arizona, approximately (b) (7)(E) miles north of construction activities. Smaller day-roosts could also be affected. Due the attenuation of vibration effects over distance, the potential impacts resulting from construction activities are minimal.

Impacts to vegetation communities resulting from IAs circumventing the primary fence would also indirectly affect, and is likely to adversely affect, the lesser long-nosed bat. The preferred foraging communities of the lesser long-nosed bats are more common at the higher elevations where these impacts would occur. Trails and other soil disturbances can increase erosion, promote the spread of invasive species, and increase the potential for fires. These communities, being at higher elevations and generally protected from development, are common throughout the lesser long-nosed bats range. The Proposed Action would reduce the current level of impacts resulting from illegal traffic in these vegetation communities north of the primary fence.

Impacts to Kearney's blue star resulting from IAs circumventing the primary fence would be indirect, but not likely to be adverse. IA foot traffic may move further up into the (b) (7)(E) (b) (7)(E) closer to known populations of Kearney's blue star. Trails and the spread of invasive species may also threaten known and unknown Kearney's blue star populations.

9.0 CUMULATIVE EFFECTS

Effects from future growth and expansion in the (b) (7)(E) County could also have adverse impacts on the jaguar's movement corridor. (b) (7)(E) population increased by 14.5 percent during the 1990s; and between 2000 and 2005, (b) (7)(E) overall population growth of 15.7 outpaced that of (b) (7)(E) County (City of (b) (7)(E) 2007). (b) (7)(E) population in 2006 was estimated to be 44,870; an estimated growth of 2.7 percent from the year prior. The Cochise College Center for Economic Resources estimates that they population of (b) (7)(E) could reach 51,331 by 2011; a project 5-year population growth of 14.4 percent. Based on the current and projected growth of (b) (7)(E) and the expansion of housing and humans into rural and undeveloped areas could remove potential jaguar habitat; thus having an adverse effect on the jaguar.

10.0 CONCLUSION AND DETERMINATION

All of the species evaluated for this BA could eventually realize beneficial effects with the reduction of illegal traffic and consequent OBP pursuit within the areas north of the fence. The installation of (b) (7)(E) fence would hinder jaguar movement and could indirectly result in increased IA traffic and consequent OBP enforcement actions in higher quality habitat away from the fence. Land managers adjacent to the project location include the Tohono O'odham Nation, the U.S. Forest Service, and the BLM. The direct impediments and the potential increased human activity in the normal travel corridors would adversely affect the jaguar. IAs circumventing the primary fence may affect, but are not likely to adversely affect, Kearney's blue star populations in the (b) (7)(E). The loss of (b) (7)(E) of foraging habitat, including (b) (7)(E) acres that contain agaves for the lesser long-nosed bat, may affect, and is likely to adversely affect, the bat. Conservation measures that will be implemented to offset or reduce impacts to these three species are:

- Work within drainages will be limited to dry periods to reduce downstream water quality effects.
- If the migratory bird nesting season (February 1 through August 31) can not be avoided, bird nests will be located and identified prior to grubbing and clearing activities. Active nests will be avoided to the extent practicable.
- CBP/OBP will attempt to avoid disturbance to agave, yucca and other plant species that are used by lesser long-nosed bats for forage, to the extent practicable. Agaves will be avoided, salvaged, or replaced at a ratio of 2:1 from local nursery stock. }
- Temporarily disturbed areas in washes would be planted with fast growing cottonwoods and willow saplings, where appropriate, to provide channel stabilization, reduce sedimentation, and to provide rapid restoration of riparian habitat. Hydroseeding would also be implemented to provide a rapid development of herbaceous cover.
- Engineering solutions (e.g., box culverts) would be developed and implemented in arroyos and washes. The solutions will be designed to prevent illegal traffic; such traffic would adversely affect habitat and disturb jaguars that might be using the wash. Additionally, vegetation should be maintained in these washes and no lights should be placed near such washes.
- CBP will support USFWS in jaguar survey and monitoring efforts and conservation and recovery measures. Survey and monitoring methods and conservation and recovery measures will be developed through coordination with USFWS, AGFD, and the Tohono O'odham Nation within 4 months following the release of the Biological Opinion. Details and schedules regarding those methods and measures will be identified by the end of the 4 months. Monitoring of jaguars may include a combination of satellite telemetry and camera survey techniques. Multiple techniques may be used to monitor jaguar habitat; however, one component of monitoring would likely include an assessment of indirect effects to jaguar movements and habitat from border traffic in areas where no fence is installed.

- (b) (7)(E)
(b) (7)(E)
(b) (7)(E)
(b) (7)(E) OBP will provide information to the USFWS on jaguar and other felid (*i.e.*, mountain lion, ocelot, and bobcat) sightings obtained through remote video surveillance (or any other means like direct observation) along the border.

Indirect benefits of the Proposed Action include a reduction in IA activity. Although other projects in the area that are being implemented by entities other than CBP could affect the species reviewed for this BA, the Proposed Action will not intensify or otherwise contribute to these potential impacts.

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